



9.18 TOWN OF RED HOOK

This section presents the jurisdictional annex for the Town of Red Hook.

9.18.1 Hazard Mitigation Plan Point of Contact

The following individuals have been identified as the hazard mitigation plan's primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Vincent Coluccio, Chair, Disaster Preparedness Committee 7340 South Broadway, Red Hook, NY 12571 (845) 835-8407 vcoluccio@hvc.rr.com	John Kuhn, Recreation Director 7340 South Broadway, Red Hook, NY 12571 (845) 758-4625 jkuhn@redhook.org

9.18.2 Municipal Profile

The Town of Red Hook is located in the northwest corner of Dutchess County. It is bordered to the north by Columbia County, to the south by the Town of Rhinebeck, to the east by the Town of Milan and to the west by the Hudson River and Ulster County. According to the 2010 Census, the Town's population was 11,319.

Growth/Development Trends

The following table summarizes recent residential/commercial development since 2010 to present and any known or anticipated major residential/commercial development and major infrastructure development that has been identified in the next five years within the municipality. Refer to the map in Section 9.8.8 of this annex which illustrates the hazard areas along with the location of potential new development.

Table 9.18-1. Growth and Development

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
Recent Development from 2010 to present					
None identified					
Known or Anticipated Development in the Next Five (5) Years					
Bard College New Dorms	Student housing	2 bldgs/64	30 Campus Road	TBD	Under construction 2015
Preserve at Lakes Kill	Major Subdivision	11 residential lots	Feller Newmark Road	TBD	Approved

** Only location-specific hazard zones or vulnerabilities identified.*

9.18.3 Natural Hazard Event History Specific to the Municipality

Dutchess County has a history of natural and non-natural hazard events as detailed in Volume I, Section 5.0 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. For the purpose of this Plan, events that have occurred in the County from 2008 to present were summarized to indicate the range and impact of hazard events in the community. Information regarding specific damages is included, if available, based on reference material or local sources. This information is presented in the table below. For details of these and additional events, refer to Volume I, Section 5.0 of this plan.



Table 9.18-2. Hazard Event History

Dates of Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
March 15, 2010	Winter Storm	N/A	N/A	Overtime for snow plowing, sanding and salt
November 17, 2010	Strong Winds	N/A	N/A	This event led to closing of roads (Feller, Newmark, Yantz Roads, Sunrise Drive, and Oriole Mills Road) and overtime costs to the Town to chip brush and open roadways.
December 26-27, 2010	Severe Winter Storm and Snowstorm / Nor'Easter	DR-1957	Yes	Overtime for snow plowing, sanding and salt
March 11-13, 2011	Heavy Rainfall, Snowmelt, Ice Jams	N/A	N/A	This event led to road washouts in the Town that included: Wildey Road, Station Hill Road, Norton Road, Echo Valley Road, Williams Road.
May 26, 2011	Thunderstorm	N/A	N/A	Overtime to cut up trees in road on Kidd Land and Yantz Road
June 8, 2011	Storm	N/A	N/A	Overtime to cut up trees on Benner Road and Spencer Drive
August 26 – September 5, 2011	Hurricane Irene	DR-4020	Yes	Hurricane Irene led to numerous road closures and several bridges were damaged in the Town. A drainage ditch of a walking track was destroyed as it eroded up to a depth of six inches to one foot. The flow of Sawkill Creek was blocked by fallen trees and tree and debris had to be removed. The outdoor roller hockey rink had its blacktop surfacing undermined and collapsed by floodwaters. The storage shed at the rink was destroyed. The tennis courts in the town were also undermined and collapsed by floodwaters. The bridges that were damaged include Aspinwall Bridge, Bank Bridge and Scism Road Bridge. The Town had over \$100,000 in damages, repairs and overtime costs as a result of this event.
October 3, 2011	Severe Storm	N/A	N/A	Wood Aspinwall Bridge was closed overnight. Numerous roads flooded in the Town which included: Roads Flooded- Moore Road, Echo Valle Road, River Road, Kelly Road, Aspinwall Road, Orlich Road, Norton Road, and Stony Brook Road.
October 29-30, 2011	Nor'Easter, Heavy Snow	N/A	N/A	Overtime for plowing, sanding and cutting up trees which cost the Town a total of over \$23,000.
September 18, 2012	Storm	N/A	N/A	Yes- Overtime and Road Closures due to flooding
October 27 – November 8, 2012	Hurricane Sandy	EM-3351	Yes	Hurricane Sandy brought down numerous trees in the Town which led to road closures. The Town had overtime costs for clearing of roads.
February 12-13, 2014	Winter Storm	N/A	N/A	Overtime on February 13 th for plowing, salting and sanding.
July 9, 2014	Microburst	N/A	N/A	Three roads in the Town were closed overnight as a result of this event. There was overtime costs for tree removal.
July 23, 2014	Thunderstorm and Lightning	N/A	N/A	Overtime to clean up trees on Feller Newmark Road, Spencer Driver and Read Road



9.18.4 Hazard Vulnerabilities and Ranking

The hazard profiles in Section 5.0 of this plan have detailed information regarding each plan participant's vulnerability to the identified hazards. The following summarizes the hazard vulnerabilities and their ranking in the Town of Red Hook. For additional vulnerability information relevant to this jurisdiction, refer to Section 5.0.

Hazard Risk/Vulnerability Risk Ranking

The table below summarizes the hazard risk/vulnerability rankings of potential hazards for the Town of Red Hook.

Table 9.18-3. Hazard Risk/Vulnerability Risk Ranking

Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard ^{a, c}	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking ^b
Coastal Storm	100-year MRP: \$1,327,375.00 500-year MRP: 7177551 Annualized: \$88,989.00	Frequent	48	High
Drought	Damage estimate not available	Frequent	42	High
Earthquake	100-Year GBS: \$163,388 500-Year GBS: \$2,473,931 2,500-Year GBS: \$20,072,096	Occasional	28	Medium
Extreme Temperature	Damage estimate not available	Frequent	30	Medium
Flood	1% Annual Chance: \$45,759,271	Frequent	36	High
Severe Storm	100-Year MRP: \$1,327,375 500-year MRP: \$7,177,551 Annualized: \$88,989	Frequent	48	High
Winter Storm	1% GBS: \$19,670,300 5% GBS: \$98,351,502	Frequent	51	High
Wildfire	Estimated Value in the WUI: \$2,259,020,177	Frequent	42	High

Notes:

GBS = General building stock; MRP = Mean return period.

- The general building stock valuation is based on the custom inventory generated for the municipality and based on improved value.
- High = Total hazard priority risk ranking score of 31 and above
Medium = Total hazard priority risk ranking of 20-30+
Low = Total hazard risk ranking below 20
- Loss estimates for the severe storm and severe winter storm hazards are structural values only and do not include the estimated value of contents. The earthquake and hurricane wind hazards were evaluated by Census tract. The Census tracts do not exactly align with municipal boundaries; therefore, a total is reported for each Town inclusive of the Villages. Loss estimates for the flood and earthquake hazards represent both structure and contents. Potential flood loss estimates were generated using HAZUS-MH 2.2 and the 2011 FEMA DFIRM for the 1-percent annual chance event. For the wildfire hazard, the improved value and estimated contents of buildings located within the identified hazard zones is provided.

National Flood Insurance Program (NFIP) Summary

The following table summarizes the NFIP statistics for the Town of Red Hook.

Table 9.18-4. NFIP Summary

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 100-year Boundary (3)
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Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 100-year Boundary (3)
Town of Red Hook	35	17	\$384,451.19	2	1	21

Source: FEMA Region 2, 2014

(1) Policies, claims, repetitive loss and severe repetitive loss statistics provided by FEMA Region 2, and are current as of 12/31/2014. Please note the total number of repetitive loss properties includes the severe repetitive loss properties. The number of claims represents claims closed by 12/31/14.

(2) Total building and content losses from the claims file provided by FEMA Region 2.

(3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file.

Notes: FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility.

A zero percentage denotes less than 1/100th percentage and not zero damages or vulnerability as may be the case.

Number of policies and claims and claims total exclude properties located outside County boundary, based on provided latitude and longitude

Critical Facilities

The table below presents HAZUS-MH estimates of the damage and loss of use to critical facilities in the community as a result of a 1- and 0.2-percent annual chance flood events.

Table 9.18-5. Potential Flood Losses to Critical Facilities

Name	Type	Exposure		Potential Loss from 1% Flood Event		
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	Days to 100-Percent ⁽¹⁾
Red Hook Pump #2	Potable Pump		X	-	-	-

Source: Dutchess County, NYGIS

Note (1): HAZUS-MH 2.2 provides a general indication of the maximum restoration time for 100% operations. Clearly, a great deal of effort is needed to quickly restore essential facilities to full functionality; therefore this will be an indication of the maximum downtime (HAZUS-MH 2.1 User Manual).

Note (2): In some cases, a facility may be located in the DFIRM flood hazard boundary; however HAZUS did not calculate potential loss. This may be because the depth of flooding does not amount to any damages to the structure according to the depth damage function used in HAZUS for that facility type. Further, HAZUS-MH may estimate potential damage to a facility that is outside the DFIRM because the model generated a depth grid beyond the DFIRM boundaries.

X Facility located within the DFIRM boundary

- Not calculated by HAZUS-MH 2.2

Other Vulnerabilities Identified

The municipality has identified the following vulnerabilities within their community:

- There are several privately owned dams that pose a threat to the Town and surrounding properties. These include the following:
 - Madalian Mill Dam on North Road and Strorybrook Road
 - Annadale Dam on Route 103 (located on the Sawkill Creek)
 - Nathan Dam located on a private pond on a private pond and used for fire suppression, a farm pond and recreation; located between Rokeby Road and Middle Road
 - Fraleighs Mill Dam located on Oriole Mills Road
 - Decker Pond Dam located on Crestwood Road
 - Llewelly Pond Dam located on a private pond and used for fire suppression, a farm pond and recreation on Rose Hill



- Moore Road Bridge – very old bridge that is used by essential personnel; at risk to flooding from the Stony Creek.
- The two bridges at Aspinawall Road are damaged during flooding events and the Town is continuously making repairs after rain events.
- The culvert on State Route 199 is usually blocked with debris and causes flooding in this area of Town.
- Echo Valley Road Bridge – during major rain events, the road around the bridge floods and makes this area impassable.
- River Road (at Annadale Triangle) – this area of the Town is prone to flooding from the Sawkill Creek
- Kelly Road – the culvert along this road is prone to flooding from the Sawkill Creek
- Norton Road – the stream that flows near the road is carving out the road bank and impacting Norton Road
- Private property upstream from the Oriole Mill Falls has a failing drainage system and it is impacting this area of the Town
- Mill Road Dam – breaching of this dam to the Sawkill Creek will put at risk four bridges, primary and secondary roadways and their drainage systems, private properties, and the town water district and recreation park facilities.



9.18.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of Mitigation Planning into Existing and Future Planning Mechanisms

Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Town of Red Hook.

Table 9.18-6. Planning and Regulatory Tools

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Planning Capability				
Master Plan	Yes	Local	Planning Board	Comprehensive Plan (2011)
Capital Improvements Plan	No			
Floodplain Management / Basin Plan	No			
Stormwater Management Plan	No			
Open Space Plan	Yes	Local	Planning Board	Chapter 57 (Community Preservation) of Town Code Article V 143.49.2 – Open Space Incentive Zoning (2011)
Stream Corridor Management Plan	No			
Watershed Management or Protection Plan	No			
Economic Development Plan	Yes	Local	Economic Development Committee	Economic Development Committee Task Force Report, 2009
Comprehensive Emergency Management Plan	Yes	Local	Emergency Management	Chapter 60 – Disaster and Emergency Preparedness (2008) Chapter 8 – Disaster Preparedness Committee (2006)
Emergency Response Plan	No			
Post-Disaster Recovery Plan	No			
Transportation Plan	No			
Strategic Recovery Planning Report	No			
Other Plans:	No			
Regulatory Capability				
Building Code	Yes	State & Local	Building Dept	Ch. 74 Fire Prevention and Building Construction



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Zoning Ordinance	Yes	Local	Zoning Board of Appeal	Ch. 143 Zoning (1993)
Subdivision Ordinance	Yes	Local	Planning Board	Ch. 120 Subdivision of Land
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Zoning and Building	Chapter 77 (Flood Damage Prevention) of Town Code
NFIP: Cumulative Substantial Damages	No			
NFIP: Freeboard	Yes	State, Local	Zoning and Building	State mandated BFE+2 for single and two-family residential construction, BFE+1 for all other construction types
Growth Management Ordinances	Yes	Local		Chapter 17 (Greenway Connections); Centers & Green Space/Open Space
Site Plan Review Requirements	Yes	Local	Planning Board	Ch. 143 (Zoning)
Stormwater Management Ordinance	No			
Municipal Separate Storm Sewer System (MS4)	No			
Natural Hazard Ordinance	No			
Post-Disaster Recovery Ordinance	No	State		DOS Policy for Emergency Response Team
Real Estate Disclosure Requirement	Yes	State	Real Estate Agent	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]	Yes			Article V 143.47 – Development within Environmental Protection Overlay District (1995) Article V 143.30 – Development near Bodies of Water Chapter 56 – Conservation Easement (2011) Chapter 128 – Trees (2008) Chapter 68 – Environmental Quality Review (1989)

Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Town of Red Hook.

Table 9.18-7. Administrative and Technical Capabilities

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Administrative Capability		
Planning Board	Yes	
Mitigation Planning Committee	Yes	Disaster Preparedness Committee
Environmental Board/Commission	Yes	Conservation and Advisory Committee
Open Space Board/Committee	Yes	Agriculture & Open Space; Community Preservation



Resources	Is this in place? (Yes or No)	Department/ Agency/Position
		Fund Advisory Board
Economic Development Commission/Committee	Yes	Economic Development Commission
Maintenance Programs to Reduce Risk	No	
Mutual Aid Agreements	Yes	Highway, EMS, Fire Department
Technical/Staffing Capability		
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Yes	
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	
Planners or engineers with an understanding of natural hazards	Yes	
NFIP Floodplain Administrator	Yes	Robert D. Fennell, ZEO
Surveyor(s)	Yes	
Personnel skilled or trained in GIS and/or HAZUS-MH applications	Yes	Town and County
Scientist familiar with natural hazards	No	
Emergency Manager	Yes	
Grant Writer(s)	Yes	Various
Staff with expertise or training in benefit/cost analysis	Yes	Various
Professionals trained in conducting damage assessments	Yes	Building Dept/Engineering

Fiscal Capability

The table below summarizes financial resources available to the Town of Red Hook.

Table 9.18-8. Fiscal Capabilities

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	Yes
Capital Improvements Project Funding	No
Authority to Levy Taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	No
Impact Fees for homebuyers or developers of new development/homes	Yes
Stormwater Utility Fee	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No
Other Federal or State Funding Programs	Yes
Open Space Acquisition Funding Programs	Yes
Other	No

Community Classifications

The table below summarizes classifications for community program available to the Town of Red Hook.



Table 9.18-9. Community Classifications

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No		
Building Code Effectiveness Grading Schedule (BCEGS)	No		
Public Protection (ISO Fire Protection Classes 1 to 10)	No		
Storm Ready	No		
Firewise	No		
Disaster/Safety Programs in/for Schools	No		
Organizations with Mitigation Focus (advocacy group, non-government)	No		
Public Education Program/Outreach (through website, social media)	Yes	Town website	
Public-Private Partnerships	Yes	Various, including the fire department	

N/A = Not applicable. NP = Not participating. - = Unavailable. TBD = To be determined.

The classifications listed above relate to the community's ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community's capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class 1 being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO's Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

National Flood Insurance Program

NFIP Floodplain Administrator (FPA)

Robert D. Fennell, Zoning Enforcement Officer

Flood Vulnerability Summary

The Town of Red Hook currently does not maintain any list/ inventories of properties that have been flood damaged. The Town also does not have any record of any structural damage from Floyd, Irene or Sandy. The



Town currently does not make substantial damage estimates. No one has expressed any interest in mitigation in the Town.

Resources

In addition the FPA, Steve Cole, Code Enforcement Official and Jackie Fenaroli, Clerk provide assistance with the responsibilities of floodplain administration in the Town of Red Hook. NFIP administration services provided by the FPA and staff include permit review and inspection. Currently, the Town does not provide any education or outreach programs to the community regarding flood hazards/risk or flood risk reduction. The FPA indicated that the largest barrier to running an effective floodplain management program in the Town is funding. The FPA feels adequately supported and trained to fulfill his responsibilities due to the fact that the Town requires more training to fulfill responsibilities as the municipal floodplain administrator. The FPA stated that continual education and/or certification training on floodplain management would be appreciated and that he would consider attending if offered.

Compliance History

The Town is currently in good standing with the NFIP. The Town has never had a compliance audit conducted.

Regulatory

The Town's floodplain management regulation exceed the federal regulation and meet the state regulations. The Planning Board conducts site plan reviews that support floodplain management and meeting the NFIP requirements.

Community Rating System

The Town of Red Hook does not participate in the Community Rating System (CRS) program.

Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community's progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures.

Planning

Land Use Planning: The Town has a Planning Board and Zoning Board of Appeals which review all applications for development and consider natural hazard risk areas in their review. Many development activities require additional levels of environmental review, specifically NYS SEQR and Federal NEPA requirements.

Conservation Planning: The Town of Red Hook has a Conservation Advisory Council that is tasked with advising the Planning and Zoning Board on conservation and environmental related issues for subdivision and major development applications.

Comprehensive Plan: The Town has a Comprehensive Plan dated 1993. It includes areas of hazard risk such as preventing increased flooding to downstream by stormwater mitigation. The Comprehensive Plan does not refer to the County's Hazard Mitigation Plan.



Town of Red Hook Energy and Climate Action Plan 2012: The Town completed a plan which analyzed the climate change risks for the town and included recommendations for managing those risks. Some of the recommendations included the following:

- Buildings: work hard now to adopt energy efficiency and renewable energy measures to safeguard against possibly rising energy prices or shortages. - make air conditioning and Town/Village “cool spots” more widely available to cope with summer heat waves - strictly enforce building codes and land use regulations to minimize risk of damage to personal health or property in the event of disaster
- Agriculture: grow crop varieties better adapted to warmer conditions and longer growing seasons- upgrade and add irrigation systems to prepare for droughts- invest in cooling equipment for farms to preserve product, especially dairy - encourage purchase of locally grown food to a) build strong local farms, and b) institute the behavior change early to ensure local food security in the event of widespread international food shortage/price increases due to drought and flood
- Smart Land Use: maximize ground cover of plant mass to minimize erosion in the event of floods - plant trees to maximize shade areas in several years - build permanent embankments around homes and other buildings vulnerable to flooding in the event of severe storms - apply “Ecosystem-based Approaches” which aim to increase ecosystem resilience and protect the critical ecosystem services on which humans depend, reducing vulnerability of human and natural systems to climate change. EbAs offer a good complement to more common strategies such as infrastructure development.
- Disaster Preparedness: work with existing Disaster Preparedness Committee to develop contingency plans and improve early warning systems for potential events. - prepare a contingency plan in the event of an influx of “climate refugees”/evacuees from coastal areas, including physical and mental health impacts on these individuals in addition to providing temporary housing, food, and water supplies.
- Community Institutions: build strong social institutions now for climate sensitivity, i.e. behaviors that support a sustainable community - work with residents to update insurance policies to safeguard against the effects of climate-induced disasters - foster strong and efficient mobilization of resources for adaptation measures, building a stable flow of financial and technical support to local actors.

Regulatory and Enforcement (Ordinances)

The Town zoning and subdivision regulations and site plan review process consider the presence of floodplains. Other natural hazards are considered on a case-by-case basis. The Planning and Zoning Boards uses the following data, information, tools, and resources to guide their decisions with respect to natural hazard risk management: town planner, third party engineer, environmental assessment form (EAF), coastal assessment form (CAF), and environmental impact studies (EIS).

The following Town ordinances pertain to hazard mitigation in the Town:

Flood Damage Prevention Chapter 77: It is the purpose of this chapter to promote the public health, safety, and general welfare and to minimize public and private losses due to flood conditions in specific areas by provisions designed to:

- A. Regulate uses which are dangerous to health, safety and property due to water or erosion hazards or which result in damaging increases in erosion or in flood heights or velocities;
- B. Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;



- C. Control the alteration of natural floodplains, stream channels, and natural protective barriers which are involved in the accommodation of floodwaters;
- D. Control filling, grading, dredging and other development which may increase erosion or flood damages;
- E. Regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards to other lands; and
- F. Qualify for and maintain participation in the National Flood Insurance Program.

Disaster and Emergency Preparedness Chapter 60: The purpose of this chapter is to minimize disasters or potential disasters and their effects, provide for effective local responses when disasters occur and facilitate local recovery.

Zoning Code Chapter 143: The Town's zoning code includes districts and standards pertaining to the mitigation of hazards. These sections include the Floodplain regulations, stormwater management & erosion control standards.

Site Plan/Subdivision Review Chapter 120: The Town's Planning Board is tasked with site plan/subdivision review. The Planning board pays special attention to ensure that developments mitigate the issues associated with flooding or steep slopes.

Building Code Chapter 52: The building codes are strictly enforced to make new and renovated buildings as prepared as possible for hazard related incidents. The chapter includes a provision to allow the building inspector to make emergency repairs to protect the health safety and welfare of the residents.

Operational and Administration

The Town's Highway Superintendent attends training and continuing professional education classes that supports natural hazard risk reduction.

Town Staff are part of Cornell Local Roads Program.

Funding

Operating Budget: The Town's operating budget contains minimal provisions for expected repairs like snow removal and infrastructure repair after a storm or natural disaster.

Capital Improvement Budget: The Town's capital improvement budget includes budget for mitigation-related projects that includes culvert and brush control.

Education and Outreach

The Town includes news briefs and announcements on the home page. The Planning Department is a member of the Dutchess County Planning Federation and attends trainings and researches best practices that other communities are implementing. The Town has planned to budget for training for personal including professional development geared towards health and safety.



9.18.6 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and prioritization.

Past Mitigation Initiative Status

The Town of Red Hook has no prior mitigation strategy.

Completed Mitigation Initiatives within the Town

The Town of Red Hook has identified the following as mitigation projects/activities that have been completed, are planned, or on-going within the municipality:

- The Town's Highway Department conducts brush cutting, mowing, tree removal, and erosion prevention through seeding. Additionally, the Highway Department upsizes culverts, monitor bridges, and remove dead trees.
- The Town shored up the stream bank of Stony Brook along Stony Brook Road, which was being eroded by the brook.

Proposed Hazard Mitigation Initiatives for the Plan

The Town of Red Hook participated in a mitigation action workshop in May 2015 and was provided the following FEMA publications to use as a resource as part of their comprehensive review of all possible activities and mitigation measures to address their hazards: FEMA 551 'Selecting Appropriate Mitigation Measures for Floodprone Structures' (March 2007) and FEMA 'Mitigation Ideas – A Resource for Reducing Risk to Natural Hazards' (January 2013).

Table 9.18-11 summarizes the comprehensive-range of specific mitigation initiatives the Town of Red Hook would like to pursue in the future to reduce the effects of hazards. Some of these initiatives may be previous actions carried forward for this Plan. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6, 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as 'High', 'Medium', or 'Low.' The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.18-12 provides a summary of the prioritization of all proposed mitigation initiatives for the Plan.



Table 9.18-10. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
Red Hook (T)-1	Replace Moore Road bridge due to its age and its importance to the Town	Existing	Flood, Severe Weather, Severe Winter Weather	1, 2, 4	Engineering and DPW	High	High	Grants with local cost share	Short Term / DOF	High	SIP	PP
Red Hook (T)-2	Establish a committee consisting of engineers, floodplain administrator, county and state experts to examine the cause of flooding for the following locations in the Town: <ul style="list-style-type: none"> Echo Valley Road Bridge River Road at Annadale Triangle Kelly Road culvert Aspinwall Road Bridges Norton Road Oriole Mill Falls Mill Road Dam Guski Road Gravel Bank Bridge and Pond Scism Road The committee will also develop mitigation actions to address the flooding of said bridges.											
	See above.	New and Existing	All	1, 2, 5, 7	Town	High	Medium	Grants with local cost share	Short Term / DOF	High	LPR	PR
Red Hook (T)-3	Support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or acquisition/relocation to protect structures from future damage, with repetitive loss and severe repetitive loss properties as a priority when applicable. Phase 1: Identify appropriate candidates and determine most cost-effective mitigation option (in progress). Phase 2: Work with the property owners to implement selected action based on available funding and local match availability.											
	See above.	Existing	Flood, Severe Weather Wildfire, Severe Winter Weather	All	Engineering via NFIP FPA with NYSDHSES, FEMA support	High	High	FEMA Mitigation Grant Programs and local budget (or property owner) for cost share	Ongoing (outreach and specific project identification); Long term DOF (specific project application and implementation)	High	SIP	PP
Red Hook (T)-4	Create a tree maintenance and debris removal program for the area along the Sawkill Creek, which is floodprone.	Existing	Flood, Severe Weather, Severe	1, 2	Engineering and DPW, working with contractors	Medium – High (reduced risk of	Medium	Local Budget	Short	Medium	NSP	NR



Table 9.18-10. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
			Winter Weather		and local utilities	utility outages; life safety)						
Red Hook (T)-5	Utilize the Hazard Mitigation Plan (HMP) when updating the Comprehensive Master Plan; consider including hazard identification, hazard zones risk assessment information, and hazard mitigation goals as identified in the HMP. Further, the findings and recommendation of the HMP will be considered during any future site plan review processes.	Both	All	All	Planning	High	Low	Municipal	Short	High	LPR	PR
Red Hook (T)-6	Notify and provide needed support to the facility manager/operator to evaluate the Red Hook Pump #2's flood vulnerability and determine what mitigation options are needed, if any. Assure that any mitigation addresses the 500-year flood event or "worst damage scenario".	Existing	Flood, Severe Weather	All	Town Administration	Medium	Low	Municipal Budget	Short term	Medium	SIP	PP

Notes:

Not all acronyms and abbreviations defined below are included in the table.

*Does this mitigation initiative reduce the effects of hazards on new and/or existing buildings and/or infrastructure? Not applicable (N/A) is inserted if this does not apply.

Acronyms and Abbreviations:

CAV	Community Assistance Visit
CRS	Community Rating System
DPW	Department of Public Works
FEMA	Federal Emergency Management Agency
FPA	Floodplain Administrator
HMA	Hazard Mitigation Assistance
N/A	Not applicable
NFIP	National Flood Insurance Program
OEM	Office of Emergency Management

Potential FEMA HMA Funding Sources:

FMA	Flood Mitigation Assistance Grant Program
HMGP	Hazard Mitigation Grant Program
PDM	Pre-Disaster Mitigation Grant Program
RFC	Repetitive Flood Claims Grant Program (discontinued)
SRL	Severe Repetitive Loss Grant Program (discontinued)

Timeline:

Short	1 to 5 years
Long Term	5 years or greater
OG	On-going program
DOF	Depending on funding



Costs:

Where actual project costs have been reasonably estimated:

Low	< \$10,000
Medium	\$10,000 to \$100,000
High	> \$100,000

Where actual project costs cannot reasonably be established at this time:

Low	Possible to fund under existing budget. Project is part of, or can be part of an existing on-going program.
Medium	Could budget for under existing work plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
High	Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.

Mitigation Category:

- *Local Plans and Regulations (LPR)* – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- *Structure and Infrastructure Project (SIP)* – These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- *Natural Systems Protection (NSP)* – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- *Education and Awareness Programs (EAP)* – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities

CRS Category:

- *Preventative Measures (PR)* – Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- *Property Protection (PP)* – These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- *Public Information (PI)* – Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- *Natural Resource Protection (NR)* – Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- *Structural Flood Control Projects (SP)* – Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
- *Emergency Services (ES)* – Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities

Benefits:

Where possible, an estimate of project benefits (per FEMA's benefit calculation methodology) has been evaluated against the project costs, and is presented as:

Low=	< \$10,000
Medium	\$10,000 to \$100,000
High	> \$100,000

Where numerical project benefits cannot reasonably be established at this time:

Low	Long-term benefits of the project are difficult to quantify in the short term.
Medium	Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.
High	Project will have an immediate impact on the reduction of risk exposure to life and property.



Table 9.18-11. Summary of Prioritization of Actions

Mitigation Action / Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
Red Hook (T)-1	Replace Moore Road bridge due to its age and its importance to the Town	1	1	1	0	1	0	-1	1	1	1	1	0	1	1	9	High
Red Hook (T)-2	Establish a committee consisting of engineers, floodplain administrator, county and state experts to examine the cause of flooding for the following locations in the Town	1	1	1	1	0	0	1	0	0	1	1	1	1	0	9	High
Red Hook (T)-3	Support the mitigation of vulnerable structures via retrofit (e.g. elevation, flood-proofing) or acquisition/relocation to protect structures from future damage, with repetitive loss and severe repetitive loss properties as a priority when applicable.	1	1	1	1	0	0	0	0	1	1	1	1	0	0	8	High
Red Hook (T)-4	Create a tree maintenance and debris removal program for the area along the Sawkill Creek, which is floodprone.	1	1	1	0	0	0	1	0	0	1	1	1	0	0	7	Medium
Red Hook (T)-5	Utilize the Hazard Mitigation Plan (HMP) when updating the Comprehensive Master Plan; consider including hazard identification, hazard zones risk assessment information, and hazard mitigation goals as identified in the HMP. Further, the findings and recommendation of the HMP will be considered during any future site plan review processes.	1	1	1	1	0	0	1	0	0	1	1	1	1	0	9	High
Red Hook (T)-6	Notify and provide needed support to the facility manager/operator to evaluate the Red Hook Pump #2's flood vulnerability and determine what mitigation options are needed, if any. Assure that any mitigation addresses the 500-year flood event or "worst damage scenario".	1	1	1	0	0	0	1	0	0	1	1	1	0	0	7	Medium

Note: Refer to Section 6 which contains the guidance on conducting the prioritization of mitigation actions.



9.18.7 Future Needs To Better Understand Risk/Vulnerability

None at this time.

9.18.8 Hazard Area Extent and Location

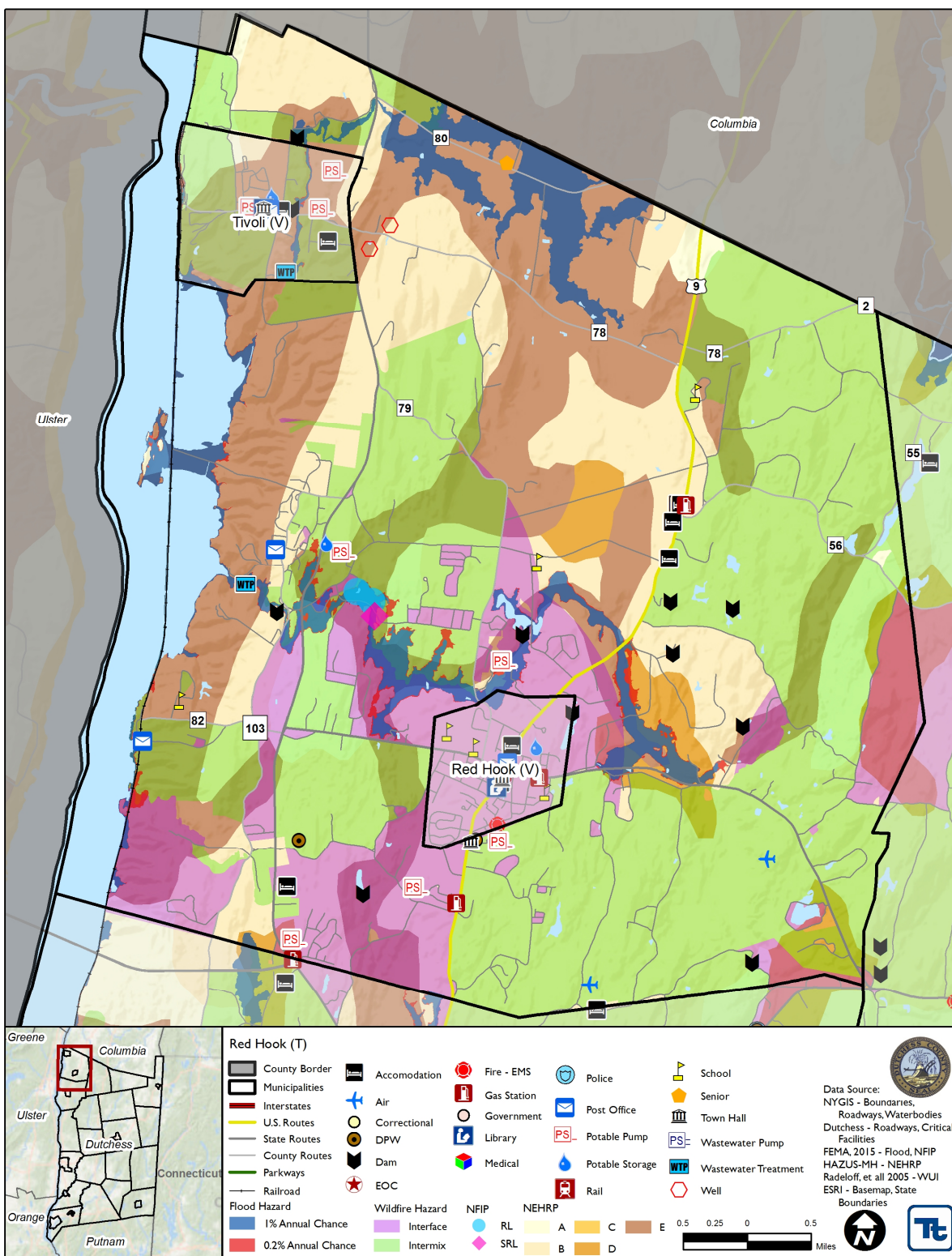
Hazard area extent and location maps have been generated for the Town of Red Hook that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan, and are considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Town of Red Hook has significant exposure. These maps are illustrated in the hazard profiles within Section 5.4, Volume I of this Plan.

9.18.9 Additional Comments

None at this time.



Figure 9.18-1. Town of Red Hook Hazard Area Extent and Location Map 1





Action Number:

Red Hook (T)-1

Action Name:

Replace Moore Road bridge due to its age and its importance to the Town

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Weather, Severe Winter Weather
Specific problem being mitigated:	Flooding of Moore Road due to bridge
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Replace Moore Road bridge
	2. Do nothing – current problem continues
	3. No other feasible options were identified
Action/Project Intended for Implementation	
Description of Selected Action/Project	Replace Moore Road bridge due to its age and its importance to the Town
Mitigation Action/Project Type	SIP
Goals Met	1, 2, 4
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	High
Estimated Cost	High
Priority*	High
Plan for Implementation	
Responsible Organization	Engineering and DPW
Local Planning Mechanism	Capital Improvement
Potential Funding Sources	Grant funding with local cost share
Timeline for Completion	Short Term / DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (see next page)



Action Number:

Red Hook (T)-1

Action Name:

Replace Moore Road bridge due to its age and its importance to the Town

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Allow roadway to be open during flooding events which will allow emergency vehicles to access residents in this area of the Town
Property Protection	1	Reducing flooding and damage to Moore Road and surrounding areas
Cost-Effectiveness	1	
Technical	0	
Political	1	
Legal	0	
Fiscal	-1	Need to seek grant funding for this
Environmental	1	
Social	1	
Administrative	1	Flood, Severe Weather, Severe Winter Weather
Multi-Hazard	1	
Timeline	0	
Agency Champion	1	
Other Community Objectives	1	
Total	9	
Priority (High/Med/Low)	High	